

CLAIMS



Claimed by letters of patent is:

1. A motorized door/gate operator the improvement comprising;

An Open logical "AND" arrangement connected such that one input produces an open-output-signal and all other inputs disables the open-output-signal.

A close logical "AND" arrangement connected such that one input produces a close-output-signal and all other inputs disables the close-output-signal.

Stated open-output-signal connects to inverting means that disables the aforementioned close logical "AND", thereby disabling the close-output-signal.

An open-to-close delay circuit, arranged such that it delays stated close-output-signal only after receiving the stated open-output-signal. Otherwise, no significant close-output-signal delay is present.

A close-to-open delay circuit, arranged such that it delays stated open-output-signal only after receiving a close-output-signal. Otherwise, no significant open-output-signal delay is present.

Switching means that reacts to stated open-to-close delay output signal to apply power line voltage to the motor causing it to rotate in one direction.

Switching means that reacts to stated close-to-open delay output signal to apply power line voltage to the motor causing it to rotate in the opposite direction.

2. A motorized door/gate operator the improvement comprising;

A close limit of travel sensing means connecting to change the logical operation of obstruction sensing from opening the motor if obstructed to stopping the motor if obstructed.

The close limit of travel sensing means also connects to a delay circuit, arranged such that it delays the close limit signal forming a new signal called the virtual-close-limit signal.

Virtual-close-limit signal connects to stop rotation of the motor in the close direction.

An open limit sensing means connects to stop rotation of the motor in the open direction.

3. The means according to claim-2 further comprising:

Stated open limit and the stated virtual-close-limit signal connect into a logical "OR" producing a new either-limit-signal.

Stated either-limit-signal couples to a one-shot circuit, producing one short duration pulse each time it is activated.

Stated short duration pulse connects to stop the motor operator whenever the either-limit-signal activates.

4. The means according to claim-2 further comprising:

Switching means to reverse the limit sensing signals such that stated close limit of travel becomes the stated open limit of travel and conversely the open limit becomes the close limit.

5. The means according to claim-4 further comprising:

Lights' indicating which particular limit sensor is active.

Placing such lights next to said limit-sensors such that, when the motor produces the correct rotation the moving mechanical position indicator moves toward the illuminated light.

Conversely, when the motor produces the incorrect rotation the moving mechanical position indicator moves away from the illuminated light.

6. A motorized door/gate operator the improvement comprising:

Relay means to rotate an electric motors shaft in one direction and a Second relay means to rotate the motor shaft in an opposite direction.

A first signal represents an opening command and a second signal represents a closing command.

A switch selects one of two rotational directions.

Means configured to reverse stated first signal and second signal in response to the position of the stated switch.

Means to energize the relays based on reversible first and second signals.

7. A motorized door/gate operator the improvement comprising;

An open switch signal and a close switch signal, connects in a Logical "OR" arrangement thereby producing at its output a first either-switch-signal.

Signal indicating that a low voltage exists and signal of the activation of a stop pushbutton switch connecting to another logical "OR" to produce a second All-Stop Signal. Such All-Stop signal connects to stop the opening and closing of the motor operator.

Stated first either-switch signal and stated second All-Stop signal connects to a logical "AND" function producing at its output a third signal. Such third output signal indicates pressing either pushbutton at the same time as a low voltage is present, or while a stop pushbutton is pressed.

Feeding back stated third signal into the logical "OR" producing stated second All-Stop signal thereby latching second All-Stop signal until removal of first either switch signal.

8. A motorized door/gate operator the improvement comprising;

A close pushbutton switch connects such as to produce a first close-switch-signal.

Stated first close-switch-signal couples to a one-shot-circuit, producing a short duration pulse with each press of the close pushbutton switch.

The short duration pulse connects to stop the opening cycle of the motor operator.

Stated first close-switch-signal also connects to start rotation of the motor in the close direction.

9. A motorized door/gate operator the improvement comprising:

A data-buss connector having multiple conductive pins, each pin connecting to one of the following functions;

Open pin connecting such that enabling the pin opens the motor operator or pressing the open pushbutton enables the pin.

Close pin connecting such that enabling the pin closes the motor operator or pressing the close pushbutton enables the pin.

Auto pin connecting such that enabling the pin performs the auto function in the motor operator or pressing the auto pushbutton or radio control enables the pin.

Stop pin connecting such that enabling the pin stops the motor operator and holding it enabled locks the motor operator or pressing the stop pushbutton enables the pin.

Open limit sensor pin connecting such that a signal from the motor operator indicates it is at the fully open position.

Close limit sensor pin connecting such that a signal from the motor operator indicates it is at the fully closed position.

Opening pin connecting such that a signal from the motor operator indicates it is actively moving in the open direction.

Closing pin connecting such that a signal from the motor operator indicates it is actively moving in the closing direction.

Close command pin such that enabling the pin closes the motor operator disregarding safety sensors and limit sensors.

Ground common pin connecting such that it serves as a common point for all inputs, outputs, and power supplies.

Unregulated low voltage power supply pin connecting such that it conducts power from the motor operator to the pin.

Regulated low voltage power supply pin connecting such that it conducts regulated power from the motor operator to the pin or from external power into the pin.

Power-enable pin connects such that when switched to stated ground pin, stated low voltage power supplies enable both the motor operator and the stated data-buss connector power pins.

Obstruction sensing or edge pin connecting such that an obstruction signal sent to the motor operator enables the pin or such pin can also send an obstruction signal to the motor operator.